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Huron

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(54) MOTION SIMULATION SYSTEM

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A47C 3/02	(2006.01)

(52) **U.S. Cl.**
CPC ***A63G 31/16*** (2013.01)

(58) **Field of Classification Search**
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USPC 472/59, 60, 61, 95–97, 130; 434/29, 55
See application file for complete search history.

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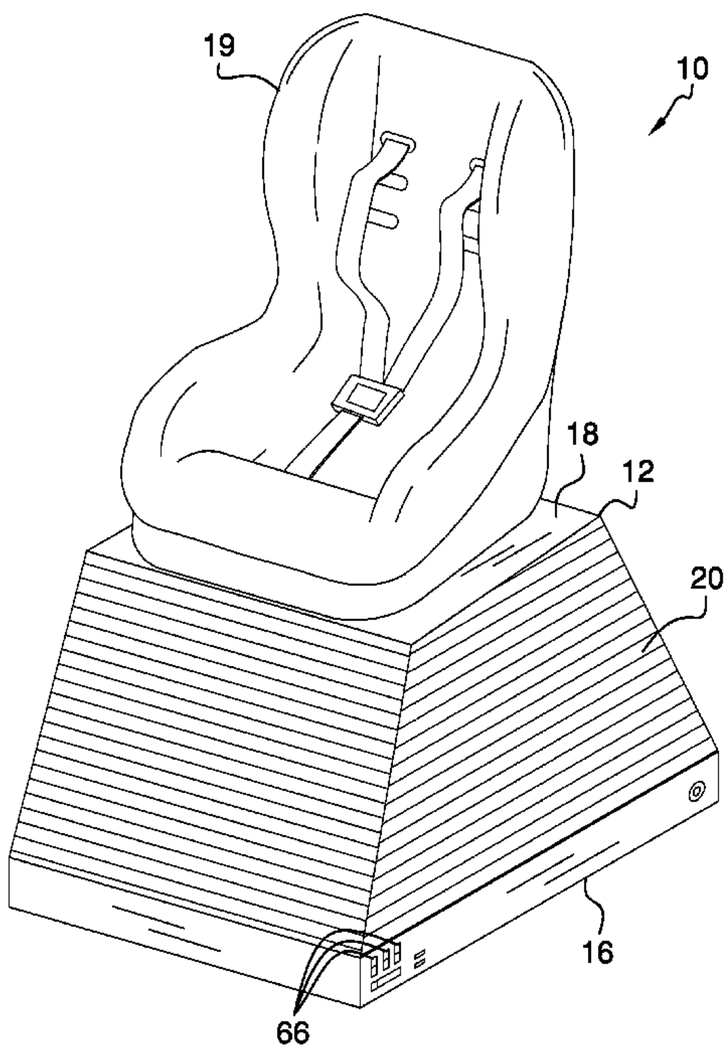
Primary Examiner — Kien Nguyen

(57) **ABSTRACT**

A motion simulation system includes a pedestal that may be positioned on a support surface. A car seat is coupled to the top wall and the car seat may support a child. A tilting unit is positioned within the pedestal and the tilting unit is mechanically coupled to the car seat. The tilting unit selectively urges the car seat to tilt in a plurality of angles with respect to a longitudinal axis extending through the pedestal. Thus, the tilting unit simulates motions associated with riding in a vehicle thereby facilitating the tilting unit to soothe the child. A control unit is coupled to the pedestal and the control unit is electrically coupled to the tilting unit.

13 Claims, 5 Drawing Sheets



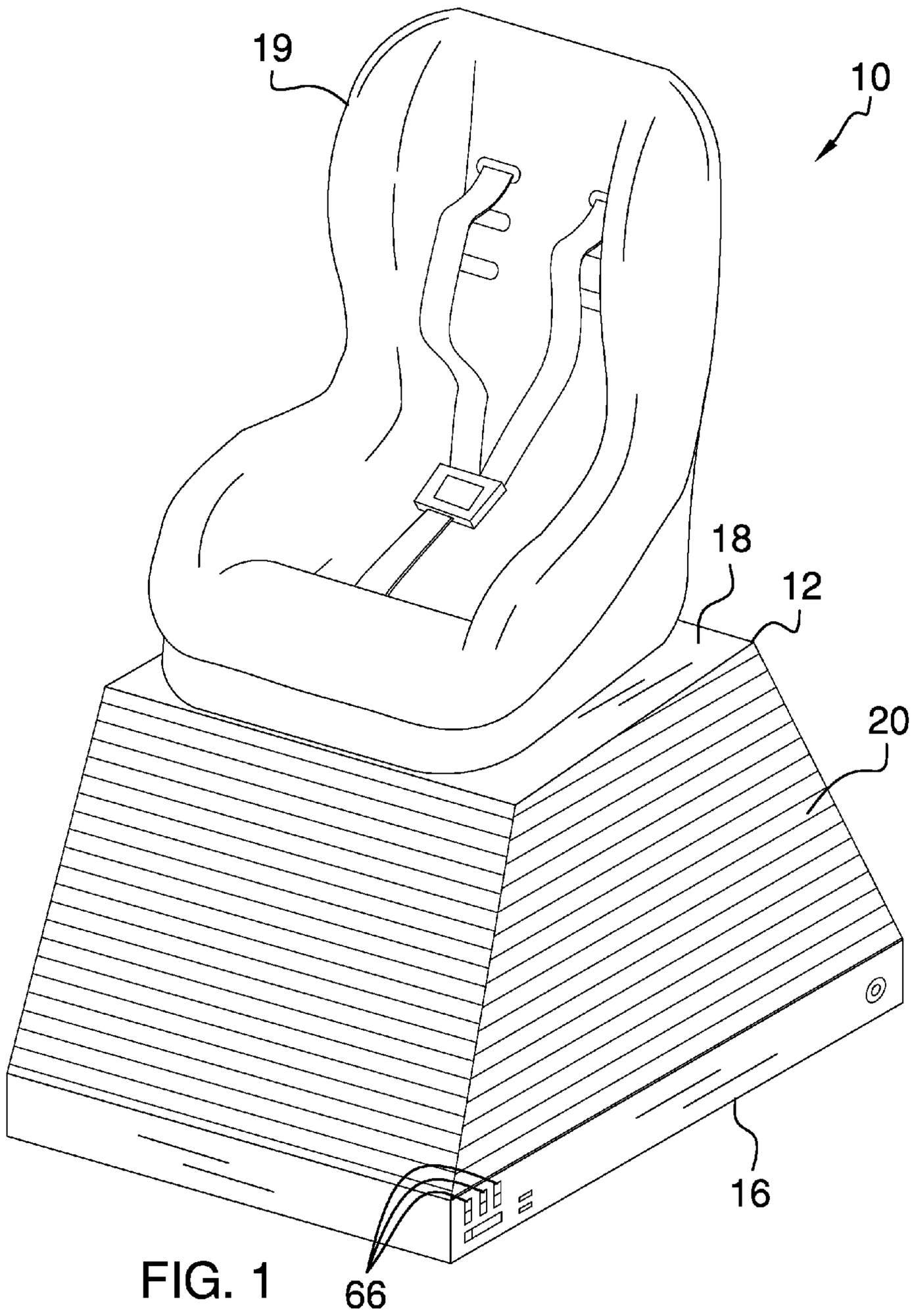


FIG. 1

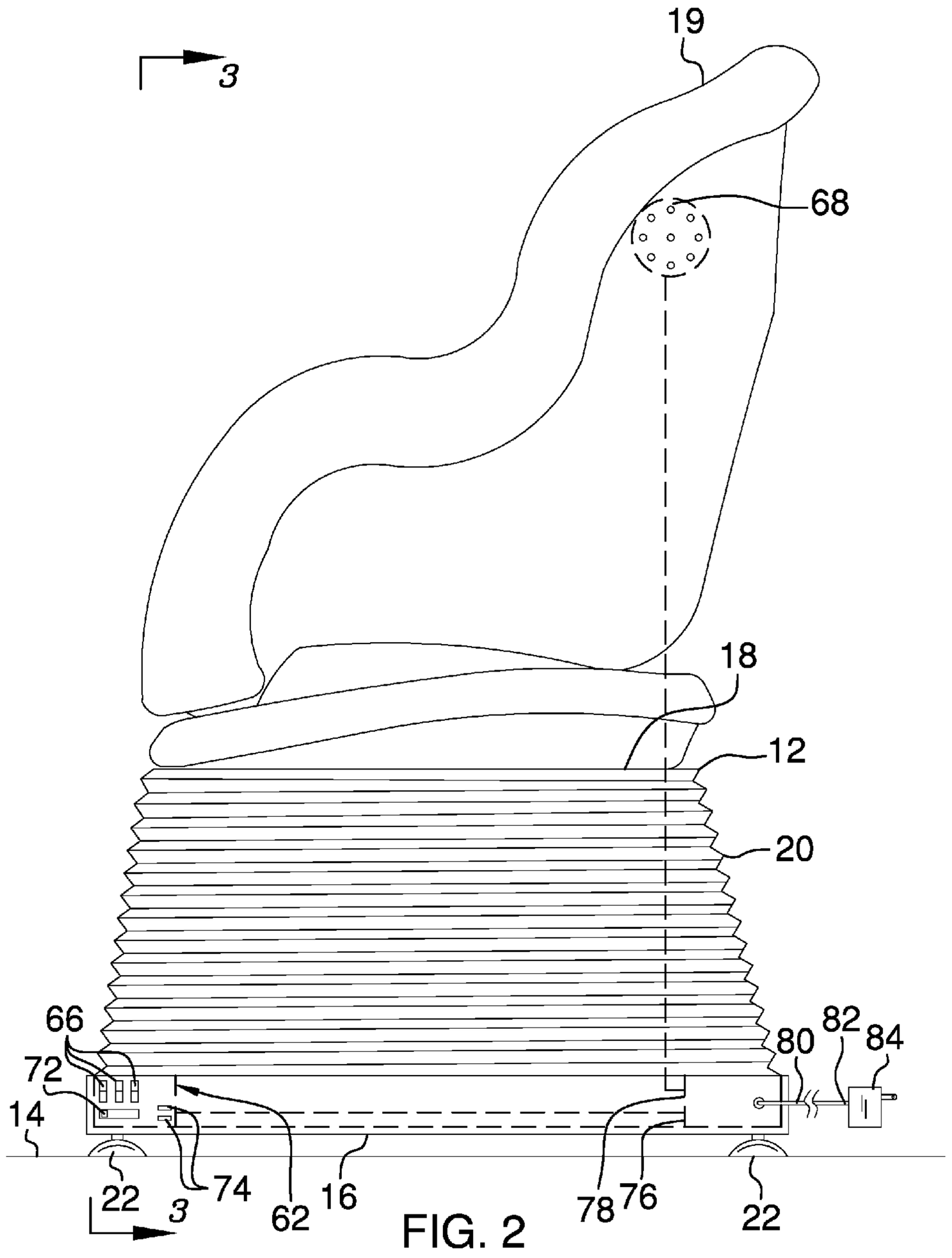
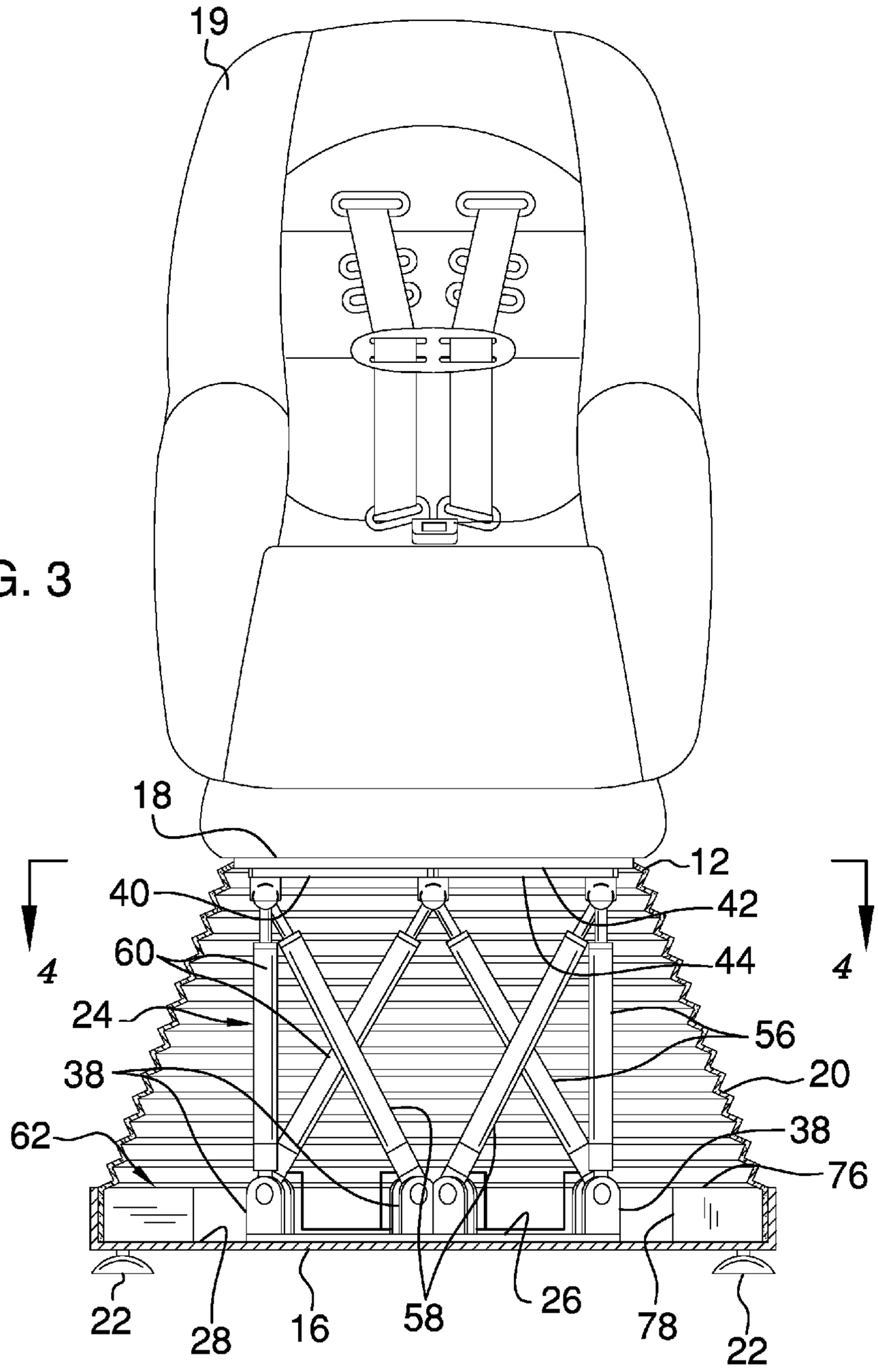


FIG. 2

FIG. 3



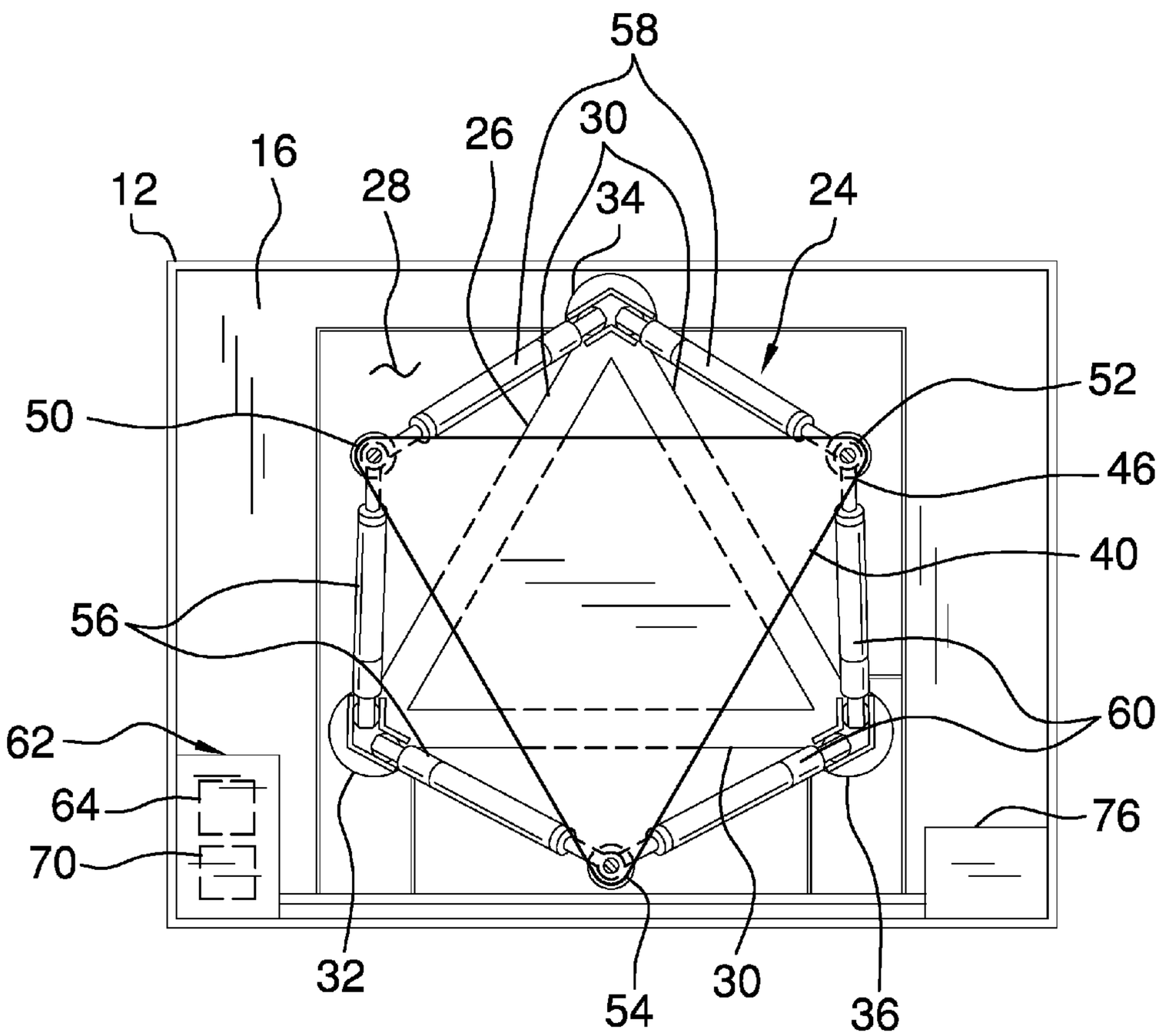


FIG. 4

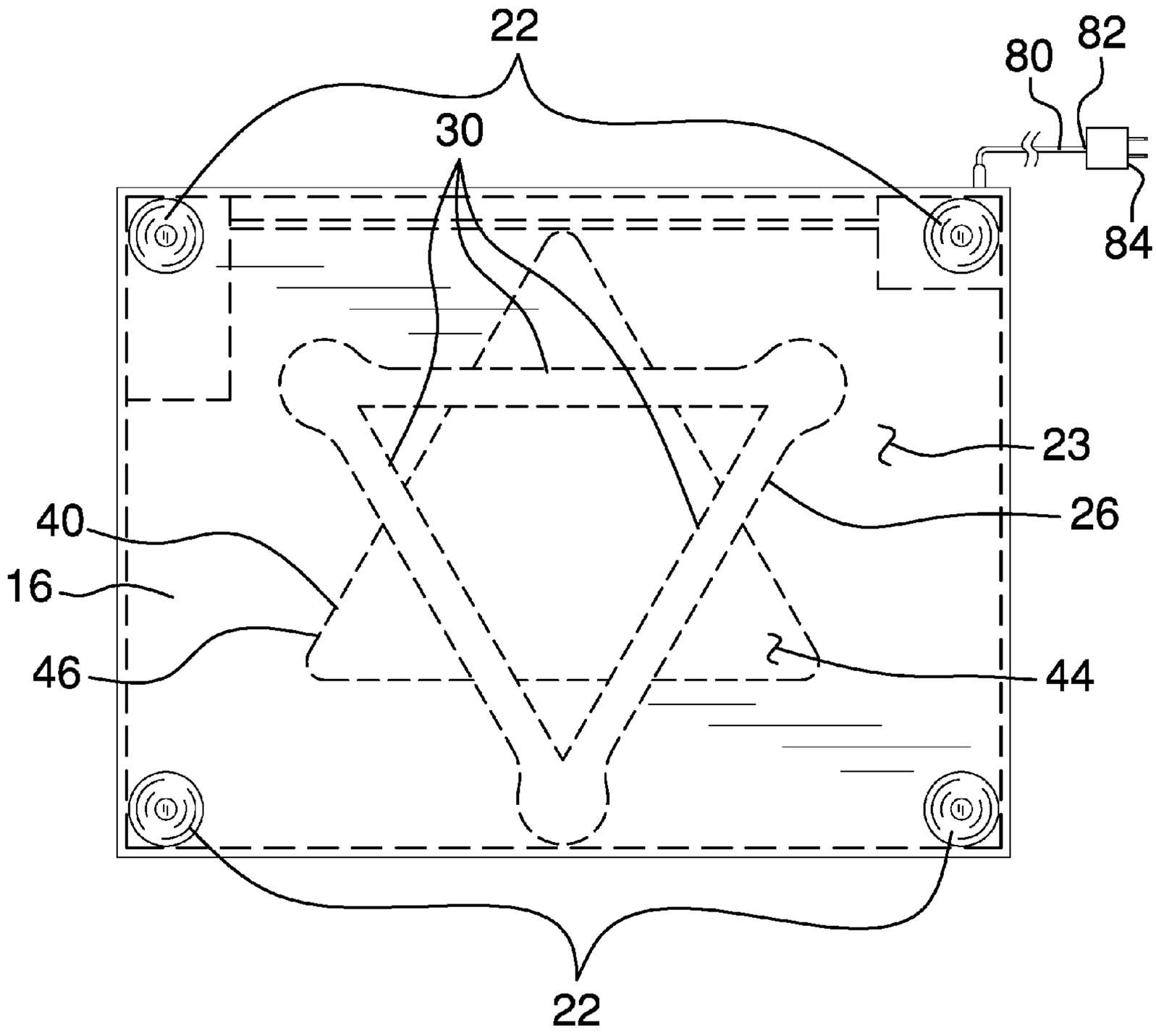


FIG. 5

MOTION SIMULATION SYSTEM

BACKGROUND OF THE DISCLOSURE

Field of the Disclosure

The disclosure relates to simulation devices and more particularly pertains to a new simulation device for soothing a child to sleep.

SUMMARY OF THE DISCLOSURE

An embodiment of the disclosure meets the needs presented above by generally comprising a pedestal that may be positioned on a support surface. A car seat is coupled to the top wall and the car seat may support a child. A tilting unit is positioned within the pedestal and the tilting unit is mechanically coupled to the car seat. The tilting unit selectively urges the car seat to tilt in a plurality of angles with respect to a longitudinal axis extending through the pedestal. Thus, the tilting unit simulates motions associated with riding in a vehicle thereby facilitating the tilting unit to soothe the child. A control unit is coupled to the pedestal and the control unit is electrically coupled to the tilting unit.

There has thus been outlined, rather broadly, the more important features of the disclosure in order that the detailed description thereof that follows may be better understood, and in order that the present contribution to the art may be better appreciated. There are additional features of the disclosure that will be described hereinafter and which will form the subject matter of the claims appended hereto.

The objects of the disclosure, along with the various features of novelty which characterize the disclosure, are pointed out with particularity in the claims annexed to and forming a part of this disclosure.

BRIEF DESCRIPTION OF THE DRAWINGS

The disclosure will be better understood and objects other than those set forth above will become apparent when consideration is given to the following detailed description thereof. Such description makes reference to the annexed drawings wherein:

FIG. **1** is a perspective view of a motion simulation system according to an embodiment of the disclosure.

FIG. **2** is a left side view of an embodiment of the disclosure.

FIG. **3** is a cross sectional view taken along line **3-3** of FIG. **2** of an embodiment of the disclosure.

FIG. **4** is a cross sectional view taken along line **4-4** of FIG. **3** of an embodiment of the disclosure.

FIG. **5** is a bottom phantom view of an embodiment of the disclosure.

DESCRIPTION OF THE PREFERRED EMBODIMENT

With reference now to the drawings, and in particular to FIGS. **1** through **5** thereof, a new simulation device embodying the principles and concepts of an embodiment of the disclosure and generally designated by the reference numeral **10** will be described.

As best illustrated in FIGS. **1** through **5**, the motion simulation system **10** generally comprises a pedestal **12** that may be positioned on a support surface **14**. The support surface **14** may be a floor or the like. The pedestal **12** has a bottom wall **16**, a top wall **18** and a peripheral wall **20** extending between the top wall **18** and the bottom wall **16**. The peripheral wall **20** is pleated between the top wall **18** and the bottom wall **16**. Thus, the top wall **18** is selectively movable with respect to the bottom wall **16**. A car seat **19** is coupled to the top wall **18** and the car seat **19** may support a child. The car seat **19** may comprise a child car seat of any conventional design.

A plurality of suction cups **22** is provided. Each of the suction cups **22** is coupled to a bottom surface **23** of the bottom wall **16**. The suction cups **22** are spaced apart from each other and distributed on the bottom wall **16**. Each of the suction cups **22** suctionally engages the support surface **14**. Thus, the pedestal **12** is inhibited from sliding on the support surface **14**.

A tilting unit **24** is positioned within the pedestal **12**. The tilting unit **24** is mechanically coupled to the car seat **19**. The tilting unit **24** selectively urges the car seat **19** to move in a plurality of directions with respect to a longitudinal axis extending vertically through the pedestal **12**. The tilting unit **24** selectively urges the car seat **19** to travel upwardly, downwardly, and perpendicular to the longitudinal axis.

The tilting unit **24** may urge the car seat **19** to substantially rotate about a lateral axis extending horizontally through the pedestal **12**. Additionally, the tilting unit **24** may urge the car seat **19** to substantially rotate about the longitudinal axis. Thus, the tilting unit **24** simulates motions associated with riding in a vehicle thereby facilitating the tilting unit **24** to soothe the child. The tilting unit **24** may comprise a six axis hydraulic actuator or the like.

The tilting unit **24** comprises a frame **26** that is coupled to a top surface **28** of the bottom wall **16**. The frame **26** has a plurality of arms **30**. Each of the arms **30** intersects with each other such that the frame **26** has a triangular shape. The triangular shape has a first point **32**, a second point **34** and a third point **36**. Each of the first point **32**, the second point **34** and the third point **36** may be rounded. The frame **26** includes a plurality of mounts **38** and each of the mounts **38** is coupled to and extends upwardly from the frame **26**. Each of the mounts **38** is positioned on an associated one of the first point **32**, the second point **34** and the third point **36**.

A plate **40** is coupled to a bottom surface **42** of the top wall **18**. The plate **40** has a bottom surface **44** and a peripheral edge **46**. The peripheral edge **46** has a plurality of intersecting sides **48** such that the plate **40** has a triangular shape. The triangular shape corresponding to the plate **40** has a primary point **50**, a secondary point **52** and a tertiary point **54**. Each of the frame **26** and the plate **40** are centrally positioned on the pedestal **12**. The plate **40** is oriented to be offset ninety degrees of rotation on the longitudinal axis with respect to the frame **26**.

A first pair of pistons **56** is provided and each of the first pair of pistons **56** extends between the frame **26** and the plate **40**. Each of the first pair of pistons **56** is movably coupled to the mount **38** corresponding to the first point **32**. Each of the first pair of pistons **56** is movably coupled to an associated one of the primary point **50** and the tertiary point **54**. Each of the first pair of pistons **56** urges the plate **40** to tilt about the longitudinal axis.

A second pair of pistons **58** is provided and each of the second pair of pistons **58** extends between the frame **26** and the plate **40**. Each of the second pair of pistons **58** is movably coupled to the mount **38** corresponding to the second point **34**. Each of the second pair of pistons **58** is movably coupled to an associated one of the primary point **50** and the secondary point **52**. Each of the second pair of pistons **58** urges the plate **40** to tilt about the longitudinal axis.

A third pair of pistons **60** is provided and each of the third pair of pistons **60** extends between the frame **26** and the plate **40**. Each of the third pair of pistons **60** is movably coupled to the mount **38** corresponding to the third point **36**. Each of the third pair of pistons **60** is movably coupled to an associated one of the secondary point **52** and the tertiary point **54**. Each of the third pair of pistons **60** urges the plate **40** to tilt about the longitudinal axis. Each of the first pair of pistons **56**, the second pair of pistons **58** and the third pair of pistons **60** may comprise an electrically controlled, linear actuator or the like.

A control unit **62** is coupled to the pedestal **12**. The control unit **62** is electrically coupled to the tilting unit **24**. Thus, the control unit **62** actuates the tilting unit **24** to tilt the car seat **19** in the plurality of angles, upwardly, downwardly and laterally. The control unit **62** comprises a processor **64** that is coupled to the pedestal **12**. The processor **64** may comprise an electronic processor or the like. The processor **64** is electrically coupled to each of the first pair of pistons **56**, the second pair of pistons **58** and the third pair of pistons **60**. The processor **64** selectively actuates each of the first pair of pistons **56**, the second pair of pistons **58** and the third pair of pistons **60** to tilt the plate **40** in a random sequence of angles with respect to the longitudinal axis. Additionally, the processor **64** selectively actuates each of the first pistons **56**, the second pair of pistons **58** and the third pair of pistons **60** to lift the plate **40**, lower the plate **40** and urge the plate **40** laterally with respect to the longitudinal axis.

A plurality of switches **66** is provided. Each of the switches **66** is coupled to the peripheral wall **20** of the pedestal **12** and each of the switches **66** may be manipulated. Each of the switches **66** is electrically coupled to the processor **64**. Each of the switches **66** controls operational parameters of the tilting unit **24**.

A speaker **68** is coupled to the car seat **19**. The speaker **68** emits audible sounds mimicking sounds associated with vehicular travel. Thus, the speaker **68** may soothe the child. The speaker **68** is electrically coupled to the processor **64**. The processor **64** includes an electronic memory **70**. The electronic memory **70** stores an audio file pertaining to the vehicular travel sounds. The electronic memory **70** additionally stores data pertaining to actuating the tilting unit **24**.

A volume button **72** is movably coupled to the peripheral wall **20** and the volume button **72** may be manipulated. The volume button **72** is electrically coupled to the processor **64** and the volume button **72** adjusts a volume of the speaker **68**. A pair of ports **74** is each coupled to the peripheral wall **20**. Each of the ports **74** may be electrically coupled to an extrinsic electronic device and each of the ports **74** is electrically coupled to the processor **64**. The ports **74** may download data into the electronic memory **70**.

A power supply **76** is coupled to the pedestal **12** and the power supply **76** is electrically coupled to the processor **64**. The power supply **76** comprises at least one rechargeable battery **78**. The power supply **76** further comprises a cord **80** extending outwardly from the peripheral wall **20**. The cord **80** is electrically coupled to the rechargeable battery **78** and the cord **80** has a distal end **82** with respect to the peripheral wall **20**. A plug **84** is electrically coupled to the distal end **82**. The plug **84** may be electrically coupled to a power source thereby facilitating the rechargeable battery **78** to be recharged.

In use, the pedestal **12** is positioned on the support surface **14** and the child is positioned in the car seat **19**. The switches **66** are manipulated to control the operational parameters of the tilting unit **24**. The volume button **72** is manipulated to adjust the volume of the speaker **68**. The tilting unit **24** tilts the car seat **19** in a random sequence of angles to mimic the motions associated with riding in a vehicle. Thus, the child is soothed to sleep. The speaker **68** additionally emits the sounds associated with traveling in the vehicle.

With respect to the above description then, it is to be realized that the optimum dimensional relationships for the parts of an embodiment enabled by the disclosure, to include variations in size, materials, shape, form, function and manner of operation, assembly and use, are deemed readily apparent and obvious to one skilled in the art, and all equivalent relationships to those illustrated in the drawings and described in the specification are intended to be encompassed by an embodiment of the disclosure.

Therefore, the foregoing is considered as illustrative only of the principles of the disclosure. Further, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the disclosure to the exact construction and operation shown and described, and accordingly, all suitable modifications and equivalents may be resorted to, falling within the scope of the disclosure. In this patent document, the word "comprising" is used in its non-limiting sense to mean that items following the word are included, but items not specifically mentioned are not excluded. A reference to an element by the indefinite article "a" does not exclude the possibility that more than one of the element is present, unless the context clearly requires that there be only one of the elements.

I claim:

1. A motion simulation system comprising:

a pedestal being configured to be positioned on a support surface, said pedestal having a bottom wall, a top wall and a peripheral wall extending between said top wall and said bottom wall, said peripheral wall being pleated such that said top wall is selectively movable with respect to said bottom wall;

a car seat being coupled to said top wall wherein said car seat is configured to support a child;

a tilting unit being positioned within said pedestal, said tilting unit being mechanically coupled to said car seat, said tilting unit selectively urging said car seat to move in a plurality of directions with respect to a longitudinal axis extending through said pedestal wherein said tilting unit is configured to simulate motions associated with riding in a vehicle thereby facilitating said tilting unit to soothe the child; and

a control unit being coupled to said pedestal, said control unit being electrically coupled to said tilting unit such that said control actuates said tilting unit to tilt the car seat in the plurality of angles.

2. The assembly according to claim **1**, wherein said tilting unit comprises a frame being coupled to a top surface of said bottom wall, said frame having a plurality of arms, each of said arms intersecting with each other such that said frame has a triangular shape having a first point, a second point and a third point, said frame including a plurality of mounts, each of said mounts being coupled to and extending upwardly from said frame, each of said mounts being positioned on an associated one of said first point, said second point and said third point.

3. The assembly according to claim **2**, wherein said tilting unit further comprises a plate being coupled to a bottom surface of said top wall, said plate having a bottom surface and a peripheral edge, said peripheral edge having a plurality of intersecting sides such that said plate has a triangular shape having a primary point, a secondary point and a tertiary point, each of said frame and said plate being centrally positioned on said pedestal, said plate being ori-

ented to be offset ninety degrees of rotation on said longitudinal axis with respect to said frame.

4. The assembly according to claim **3**, further comprising a first pair of pistons, each of said first pair of pistons extending between said frame and said plate, each of said first pair of pistons being movably coupled to said mount corresponding to said first point, each of said first pair of pistons being movably coupled to an associated one of said primary point and said tertiary point, each of said first pair of pistons urging said plate to tilt about the longitudinal axis.

5. The assembly according to claim **3**, further comprising a second pair of pistons, each of said second pair of pistons extending between said frame and said plate, each of said second pair of pistons being movably coupled to said mount corresponding to said second point, each of said second pair of pistons being movably coupled to an associated one of said primary point and said secondary point, each of said second pair of pistons urging said plate to tilt about the longitudinal axis.

6. The assembly according to claim **3**, further comprising a third pair of pistons, each of said third pair of pistons extending between said frame and said plate, each of said third pair of pistons being movably coupled to said mount corresponding to said third point, each of said third pair of pistons being movably coupled to an associated one of said secondary point and said tertiary point, each of said third pair of pistons urging said plate to tilt about the longitudinal axis.

7. The assembly according to claim **1**, wherein:

said tilting unit comprises a first pair of pistons, a second pair of pistons, a third pair of pistons and a plate; and

said control unit comprises a processor being coupled to said pedestal, said processor being electrically coupled to each of said first pair of pistons, said second pair of pistons and said third pair of pistons, said processor selectively actuating each of said first pair of pistons, said second pair of pistons and said third pair of pistons to tilt said plate in a random sequence of angles with respect to said longitudinal axis.

8. The assembly according to claim **1**, further comprising:

a processor; and

a plurality of switches, each of said switches being coupled to said peripheral wall wherein each of said switches is configured to be manipulated, each of said switches being electrically coupled to said processor such that each of said switches controls operational parameters of said tilting unit.

9. The assembly according to claim **1**, further comprising:

a processor; and

a speaker being coupled to said car seat wherein said speaker is configured to emit audible sounds mimicking sounds associated with vehicular travel thereby facilitating said speaker to soothe the child, said speaker being electrically coupled to said processor.

10. The assembly according to claim **9**, further comprising a volume button being movably coupled to said peripheral wall wherein said volume button is configured to be manipulated, said volume button being electrically coupled to said processor such that said volume button adjusts a volume of said speaker.

11. The assembly according to claim **1**, further comprising:

a processor; and

a pair of ports, each of said ports being coupled to said peripheral wall wherein each of said ports is configured to be electrically coupled to an extrinsic electronic device, each of said ports being electrically coupled to said processor.

12. The assembly according to claim **1**, further comprising:

a processor; and

a power supply being coupled to said pedestal, said power supply being electrically coupled to said processor, said power supply comprising at least one rechargeable battery, said power supply further comprising a cord extending outwardly from said peripheral wall, said cord being electrically coupled to said rechargeable battery, said cord having a distal end with respect to said peripheral wall, said distal end having a plug being electrically coupled thereto, said plug being configured to be electrically coupled to a power source thereby facilitating said rechargeable battery to be recharged.

13. A motion simulation system comprising:

a pedestal being configured to be positioned on a support surface, said pedestal having a bottom wall, a top wall and a peripheral wall extending between said top wall and said bottom wall, said peripheral wall being pleated such that said top wall is selectively movable with respect to said bottom wall;

a car seat being coupled to said top wall wherein said car seat is configured to support a child;

a tilting unit being positioned within said pedestal, said tilting unit being mechanically coupled to said car seat, said tilting unit selectively urging said car seat to move in a plurality of directions with respect to a longitudinal axis extending through said pedestal wherein said tilting unit is configured to simulate motions associated with riding in a vehicle thereby facilitating said tilting unit to soothe the child, said tilting unit comprising:

a frame being coupled to a top surface of said bottom wall, said frame having a plurality of arms, each of said arms intersecting with each other such that said frame has a triangular shape having a first point, a second point and a third point, said frame including a plurality of mounts, each of said mounts being coupled to and extending upwardly from said frame, each of said mounts being positioned on an associated one of said first point, said second point and said third point,

a plate being coupled to a bottom surface of said top wall, said plate having a bottom surface and a peripheral edge, said peripheral edge having a plurality of intersecting sides such that said plate has a triangular shape having a primary point, a secondary point and a tertiary point, each of said frame and said plate being centrally positioned on said pedestal, said plate being oriented to be offset ninety degrees of rotation on said longitudinal axis with respect to said frame,

a first pair of pistons, each of said first pair of pistons extending between said frame and said plate, each of said first pair of pistons being movably coupled to said mount corresponding to said first point, each of said first pair of pistons being movably coupled to an associated one of said primary point and said tertiary point, each of said first pair of pistons urging said plate to tilt about the longitudinal axis,

a second pair of pistons, each of said second pair of pistons extending between said frame and said plate, each of said second pair of pistons being movably coupled to said mount corresponding to said second point, each of said second pair of pistons being

movably coupled to an associated one of said primary point and said secondary point, each of said second pair of pistons urging said plate to tilt about the longitudinal axis,

a third pair of pistons, each of said third pair of pistons extending between said frame and said plate, each of said third pair of pistons being movably coupled to said mount corresponding to said third point, each of said third pair of pistons being movably coupled to an associated one of said secondary point and said tertiary point, each of said third pair of pistons urging said plate to tilt about the longitudinal axis, and

a control unit being coupled to said pedestal, said control unit being electrically coupled to said tilting unit such that said control actuates said tilting unit to tilt the car seat in the plurality of angles, said control unit comprising:

a processor being coupled to said pedestal, said processor being electrically coupled to each of said first pair of pistons, said second pair of pistons and said third pair of pistons, said processor selectively actuating each of said first pair of pistons, said second pair of pistons and said third pair of pistons to tilt said plate in a random sequence of angles with respect to said longitudinal axis,

a plurality of switches, each of said switches being coupled to said peripheral wall wherein each of said switches is configured to be manipulated, each of said switches being electrically coupled to said processor such that each of said switches controls operational parameters of said tilting unit,

a speaker being coupled to said car seat wherein said speaker is configured to emit audible sounds mimicking sounds associated with vehicular travel thereby facilitating said speaker to soothe the child, said speaker being electrically coupled to said processor,

a volume button being movably coupled to said peripheral wall wherein said volume button is configured to be manipulated, said volume button being electrically coupled to said processor such that said volume button adjusts a volume of said speaker,

a pair of ports, each of said ports being coupled to said peripheral wall wherein each of said ports is configured to be electrically coupled to an extrinsic electronic device, each of said ports being electrically coupled to said processor, and

a power supply being coupled to said pedestal, said power supply being electrically coupled to said processor, said power supply comprising at least one rechargeable battery, said power supply further comprising a cord extending outwardly from said peripheral wall, said cord being electrically coupled to said rechargeable battery, said cord having a distal end with respect to said peripheral wall, said distal end having a plug being electrically coupled thereto, said plug being configured to be electrically coupled to a power source thereby facilitating said rechargeable battery to be recharged.

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